

EN200 NAVAL ENGINEERING I

COURSE OBJECTIVES

CHAPTER 2

2. HULL FORM AND GEOMETRY

1. Be familiar the ways ships can be classified.
2. Be able to explain the difference between aerostatic, hydrostatic, and hydrodynamic support.
3. Be familiar with the following types of marine vehicles: displacement ships, catamarans, planing vessels, hydrofoil, hovercraft, SWATH, and submarines.
4. Learn Archimedes Principle in word and mathematical form.
5. Be able to do calculations using Archimedes Principle.
6. Be able to read, interpret, and relate the body plan, half-breadth plan, and sheer plan including naming the lines found in each plan.
7. Be able to relate the information in a ship's lines plan to a Table of Offsets.
8. Be familiar with the following hull form terminology:
 - a. After Perpendicular (AP), Forward Perpendiculars (FP) and midships.
 - b. Length Between Perpendiculars (L_{pp}) and Length Overall (LOA).
 - c. Keel (K), Depth (D), Draft (T), Mean Draft (T_m), Freeboard and Beam (B)
 - d. Flare, Tumble home and Camber.
 - e. Centerline (**6**), Baseline and Offset.
9. Be able to define, compare, and contrast “centroid” and “center of mass”.
10. Be able to state the physical significance and location of the center of buoyancy (B) and center of flotation (F) and state how these points are located using LCB, VCB, TCB, TCF, and LCF.

11. Use Simpson's 1st Rule to calculate the following given a Table of Offsets:
 - a. Waterplane Area (A_{wp}) or (WPA).
 - b. Sectional Area (A_{sect}).
 - c. Submerged Volume (L).
 - d. Longitudinal Center of Flotation (LCF).
12. Be able to read and use a ship's Curves of Form to find hydrostatic properties.
13. Be sure that you are knowledgeable about each of the properties on the Curves of Form.
14. Calculate trim given T_{aft} and T_{fwd} and understand its physical meaning.